CLAIMS

1. A parallax barrier device comprising a pair of transparent-electrode substrates each provided with a transparent electrode,

wherein a barrier light-shielding part and a light-transmitting part are formed in a gap between the pair of transparent-electrode substrates,

a liquid crystal layer is formed in the barrier light-shielding part, and

a resin layer having the property of transmitting light is formed in the light-transmitting part,

the barrier light-shielding part separates light for a first image viewed from a first direction and light for a second image viewed from a second direction different from the first direction, and

the light-transmitting part transmits the light for the first image and the light for the second image.

2. The parallax barrier device of claim 1, wherein the first image is viewed by a viewer's left eye, and

the second image is viewed by the viewer's right eye.

3. The parallax barrier device of claim 1, wherein the barrier light-shielding part and the light-transmitting part are alternately arranged along a direction in a plane parallel to the pair of transparent-electrode substrates, and

the width of the barrier light-shielding part in the direction in the plane is larger than or equal to the width of the light-transmitting part in the direction in the plane.

4. The parallax barrier device of claim 1, wherein the liquid crystal layer is a liquid

crystal layer exhibiting homogeneous alignment and containing a liquid crystal material whose dielectric-constant anisotropy is positive, and

the liquid crystal layer has a retardation of 1/2 of the wavelength of light entering the liquid crystal layer under application of no voltage.

5. The parallax barrier device of claim 1, wherein the liquid crystal layer is a liquid crystal layer exhibiting homeotropic alignment and containing a liquid crystal material whose dielectric-constant anisotropy is negative, and

the liquid crystal layer has a retardation of 1/2 of the wavelength of light entering the liquid crystal layer under application of a voltage.

6. The parallax barrier device of claim 1, wherein the liquid crystal layer is a liquid crystal layer exhibiting twisted nematic alignment.

7. The parallax barrier device of claim 1, wherein the transparent electrode provided in each of the pair of transparent-electrode substrates is a common electrode.

8. The parallax barrier device of claim 1, further comprising a pair of polarizers sandwiching the pair of transparent-electrode substrates therebetween,

wherein the directions of transmission easy axes of the pair of polarizers are approximately parallel to each other.

9. The parallax barrier device of claim 1, further comprising:

a pair of polarizers sandwiching the pair of transparent-electrode substrates therebetween; and

an optical retardation plate having a retardation of 1/2 of the wavelength of incident light and placed in a gap between at least one of the pair of transparent-electrode substrates and at least one of the polarizers opposing said at least one of the pair of transparent-electrode substrates,

wherein the directions of transmission easy axes of the pair of polarizers are approximately orthogonal to each other.

10. The parallax barrier device of claim 1, wherein the resin layer having the property of transmitting light also functions as a spacer for maintaining a uniform space between the pair of transparent-electrode substrates.

11. A method for fabricating the parallax barrier device of claim 1, the method comprising the steps of:

applying a resin material having an approximately isotropic refractive index and having the property of transmitting light onto the transparent-electrode substrates; and

performing, on the resin material, processes of light exposure using a photo mask, development and baking, thereby forming the resin layer.

12. A display apparatus comprising:

the parallax barrier device of claim 1; and

an image display device including a first pixel part constituting the first image and a second pixel part constituting the second image.

13. The display apparatus of claim 12, wherein the first pixel part is a pixel part for a left eye, and

the second pixel part is a pixel part for a right eye.

14. The display apparatus of claim 12, further comprising a light source placed at a larger distance from a viewer than those from the parallax barrier device and the image display device.

15. The display apparatus of claim 12, wherein the liquid crystal layer switches display between a first display and a second display by switching the state of light between opaque and transmission in accordance with an electric signal applied to the pair of transparent-electrode substrates.

16. The display apparatus of claim 13, wherein the liquid crystal layer switches display between a stereoscopic display and a plane display by switching the state of light between opaque and transmission in accordance with an electric signal applied to the pair of transparent-electrode substrates.